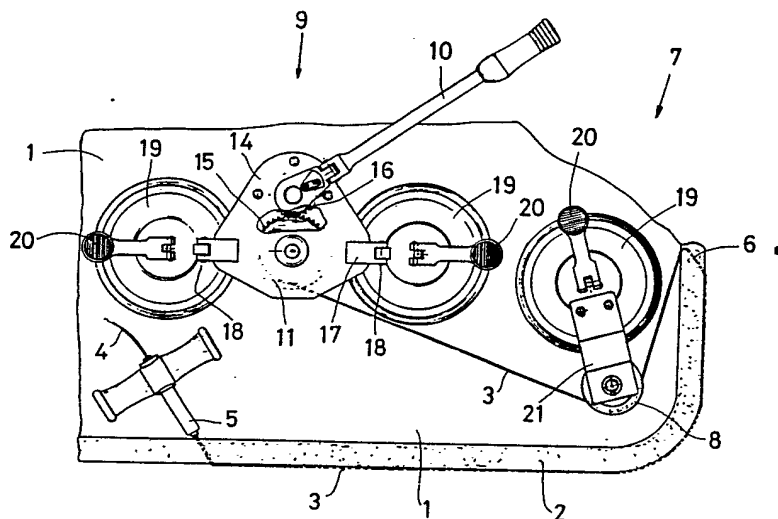




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(54) Title: A METHOD AND APPARATUS FOR WINDSCREEN DISMOUNTING



(57) Abstract

A method for dismantling a glued vehicle screen (1) from a vehicle chassis or body (13) comprises the steps that a cutting wire (3) is passed through the glue joint (2) retaining the screen (1) and is laid along substantially the entire glue joint (2) on the outside of the screen (1) and is positionally fixed on the penetration through the glue joint (2). On the inside of the screen, the wire (3) is drawn by a drawing device (9) which is secured to the screen, and the wire (3) is guided in relation to the glue joint (2) by means of a movable guide (7), such that the wire constantly makes an acute angle with that portion of the glue joint (2) which is cut through. An apparatus for carrying out the method comprises a wire (3) with an anchorage device (5) at its one end (4) and with a drawing device (9) at the other end, the device being fixable to the screen (1). The apparatus further comprises a movable guide (7, 8), fixable on the screen, for guiding the cutting portion (6) of the wire (3) to an acute angle with the glue joint (2).

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A method and apparatus for windscreen dismounting.

TECHNICAL FIELD

The present invention relates to a method and an apparatus for dismounting of a glued windscreen from a vehicle chassis.

As vehicles chassis and bodies are designed for offering steadily lower coefficients of wind resistance and are provided with steadily larger glass areas, more stringent requirements are being placed on the mounting of the windscreens, both as regards smooth transitions between the windscreen or window and surrounding portions of the vehicle chassis, and as regards the strength of the mounting of the windscreen. For this reason, the prior Art assembly technique in which a windscreen or window is sealingly clamped in place in a grooved rubber strip, is steadily being abandoned, since this mounting method, on the one hand, results in marked transitions to the glass surface, and, on the other hand, fails to provide such strength in the mounting that the glass screen may function, to any appreciable extent, as a bearing element in the vehicle chassis. Consequently, as an alternative to mounting vehicle screens or windows in rubber strips, the Art has commenced to employ glue joints in which the glass screen is glued in a groove in the vehicle chassis so that the outer face of the glass screen will substantially lie flush with surrounding portions of the vehicle chassis. By such a glued connection joint, a high degree of strength will be attained, so that the glass screen may, to a considerable degree, be

utilised as a bearing element in the vehicle chassis. The glue types employed are based on polyurethane or butyl and are applied in a layer of a thickness of a few millimetres and a width of from 15 to 25 mm.

5 BACKGROUND ART

For dismantling glued glass screens from vehicle chassis of the type considered above, use has been made in the Art of different special tools, of which one such tool type is an oscillating knife which, in an extremely rapid movement pattern, is inserted in the glue joint between the glass screen and the vehicle chassis. Since vehicle chassis may vary considerably as regards appearance and dimensions, it will be readily appreciated that a special knife blade is required for every individual vehicle chassis model. Naturally, such a special adaptation of machines and tools involves considerable problems as regards store-maintenance, high costs and so on. The vibrating knife tool also suffers from the serious drawback which afflicts every other type of vibratory tool, namely that the user will, after a time, be stricken with so-called dead hand. Finally, mention should also be made of the fact that the knife blades employed may be of very flimsy dimensions, with the result that they readily break.

It is also previously known in this Art to employ an electrically-heated tool with fixed knife blades, the blades being specially adapted also in this case in dependence upon the windscreen which is to be dismantled.

This type of prior Art dismantling apparatus is also of a highly dubious nature because of the fact that the electrically-heated knife blade subjects the glue in the joint to such high temperatures that toxic gases are generated. The electrically-heated knife also burns the glue in such a manner that it would probably be necessary to remove by hand the burnt glue residues before any new glue could be applied, and the same, or a new windscreen, be mounted. In this context, it should be pointed out that it is a considerable advantage if a certain layer of the glue joint be retained both on the vehicle chassis and on the windscreen, since, in such an event, problems involved in cleaning, problems with primer and the like are avoided; the new glue can quite simply be applied on the

old and gain a secure anchorage therein.

PROBLEM STRUCTURE

Thus, the object of the present invention is to realise a method and an apparatus of the type mentioned by way of introduction, in which the method and the apparatus are so designed as to permit the single-handed dismounting of a glued vehicle windscreen, as to wholly eliminate all vibration and noise problems, and as to eliminate all problems inherent in burning of the glue joint and the resultant generation of toxic gases. Thus, in general terms, the invention has for its object to realise a method and an apparatus which obviates all of the above-mentioned prior Art shortcomings and drawbacks.

SOLUTION

The above-outlined object of the present invention is attained if the method intimated by way of introduction is characterised in that a wire is passed through the glue joint retaining the screen, that the wire, on the outside of the screen, is laid along a portion of the glue joint, that the wire is subjected to traction and that, during this operation, the wire on the inside of the screen is guided to an acute angle in relation to the longitudinal direction of that portion of the glue joint which the wire cuts through.

One advantageous embodiment of the method according to the invention is characterised in that the wire is, on the outside of the screen, laid along substantially the entire glue joint and that a portion of the wire is positionally fixed in the proximity of that point where it was passed through the glue joint, and that the wire is subjected to traction from the inside of the screen.

Further advantages will be attained if the method is also given the characterising features according to any one of claims 3-7.

The above-outlined object of the present invention will be attained if the apparatus according to the present invention is characterised by a wire which may be passed through a glue joint retaining the screen, a fixing element which may be secured on an end portion of the wire and is designed for positional fixation of the wire in relation to the screen or the vehicle chassis, and a drawing device designed to subject the wire to traction and being movably fixable on the inside of the screen.

In one preferred embodiment, the apparatus according to the present invention is characterised by a guide member movably fixable on the screen, and including a guide element for guiding the wire along the screen and to an acute angle with the longitudinal direction of that portion of the glue joint through which the wire extends.

In order to avoid unduly excessive loadings on the guide member, it further suitably applies according to the present invention that the guide member and drawing device be positively interconnectible.

In order that the subject matter of the present invention may also be used on extremely arched or curved screens, it further suitably applies according to the invention that both the drawing device and the guide member be fixedly retainable on the screen by suction means which, at least on the drawing device, are pivotally fixable therein.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

The nature of the present invention and its aspects will be more readily understood from the following brief description of the accompanying Drawings, and discussion relating thereto.

In the accompanying Drawings:

Fig. 1 is a view, from inside the vehicle, of a portion of a vehicle screen and its retaining glue joint, a drawing device and a guide member for a wire cutting through the glue joint being disposed on the inside of the screen;

Fig. 2 is an approximately horizontal section through a vehicle screen and a supporting post in a vehicle chassis or body;

Fig. 3 is a view corresponding to Fig. 1 of a modified embodiment of the present invention;

Fig. 4 is a view corresponding to that of Fig. 2 of the embodiment according to Fig. 3;

Fig. 5 is an approximately horizontal section through a third embodiment of the present invention; and

Fig. 6 shows the embodiment of Fig. 5 seen from the interior of the screen.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring to the Drawings, Fig. 1 shows, by reference numeral 1, a vehicle screen, which may be a windscreen, rear screen or side window. The vehicle screen 1 is fixedly retained, by means of a glue joint 2, in a post or other portion (not shown) of a vehicle chassis (not shown). As a rule, the glue joint consists of a polyurethane glue or a butyl-based glue which is applied on a portion of the vehicle chassis extending parallel to the screen, such that the screen and this portion overlap one another and there is formed therebetween space for the glue joint. In this instance, the glue joint 2 is of a thickness (at right angles to the plane of extent of the screen) of the order of magnitude of from 2 to 7 mm and a width of the order of magnitude of from 10 to 30 mm. Naturally, the glue joint extends continuously throughout the entire circumference of the screen.

It will be further apparent from Fig. 1 that the subject matter of the present invention includes a wire 3 which is laid along the glue joint 2 on the outside of the screen, but which is passed through the glue joint so that it may, with one end portion 4, be fixedly retained in some form of anchorage device 5 whose purpose is to positionally fix the end portion 4 of the wire 3 in relation to the screen 1 or the vehicle chassis.

It will further be apparent that the wire 3 runs along the glue joint 2 a relatively long distance and that the wire, at a cutting portion 6, passes through the glue joint and into the inside of the screen. At this point, that portion of the wire located on the inside of the screen makes an acute angle with the longitudinal direction of that portion of the glue joint 2 which the cutting portion 6 severs. A guide member 7, which is movable but reliably positionally fixable on the inside of the screen, ensures the constancy of this function. Suitably, the guide member 7 may have a rotating pulley 8 or a slip block which imparts to the wire 3 the suitable direction in relation to the glue joint 2, at the same time that the wire is, in the event that the screen is greatly arched, held in a position closely adjacent the screen. The pulley 8 or slip block is, thus, disposed closely adjacent the screen or is adjustable transversely of the plane of extent of the screen so as to guide the

the cutting portion 6 of the wire also in a direction transversely of the plane of extent of the screen so that the cutting portion cuts approximately in the middle of the strand of the glue joint 2 - or one or two millimetres from the screen, preferably substantially parallel with the plane of the screen in the cutting region.

The subject matter of the present invention further includes a drawing device 9 which has an operating handle 10 for cranking a spool 11 intimated by ghosted lines, on which spool the wire 3 may be wound. Furthermore, the drawing device 9 is, of course, fixably disposable on the inside of the screen at substantially any optional position.

Fig. 2 shows a section through a vehicle screen 1 which is mounted against a flange 12 on a post 13 forming part of a vehicle chassis. In this case, the mounting is such that the outside of the screen is located in approximately the same plane as the outside of the post 13, and there is, between the end edge of the screen and proximal portions of the post 13, but a narrow groove, where there may possibly be fixedly disposed some type of covering or masking strip which masks the joint region between the screen and the post, and which possibly masks the glue joint 2.

It is apparent from the Drawings that the drawing device 9 is constructed on the basis of a plate 14 which carries the spool 11 on its side facing the screen 1. The spool is either itself provided with or is connected to a gear rim 15 which is in mesh with a small gear wheel 16 which, in its turn, is connected to the handle 10 which may preferably be designed as the ratchet handle of a normal socket tool set. Furthermore, the spool should be placed such that it will be located as close to the screen 1 as possible in order thereby to avoid shear loading. For safety reasons, the spool is provided with a removable guard which prevents the wire (of the piano wire type) from flying off the spool and possibly injuring a bystander in the event of wire breakage.

Moreover, the plate 14 is provided with two anchorages 17 which, by the intermediary of pivots 18, are connected to suction cups 19 fitted with a handle 20 and rubber cups which adhere by suction against the screen 1 with such force that the drawing device 9

cannot be removed.

In the illustrated embodiment, the pivots 18 are provided with approximately parallel pivot shafts which are, moreover, substantially parallel to the plane of extent of the screen 1. Naturally, it may, on certain occasions, be an advantage, should the screen be greatly or irregularly arched, if the one pivot is designed as a universal joint permitting pivotal movements in more than one direction. Alternatively, two pivots can be provided for the one suction cup 19, in which the pivot shafts are located in a plane substantially parallel with the screen, but in which the pivot shafts make essentially a right angle with one another or intersect one another.

The journalling and anchorage of the spool 11 are suitably effected such that the spool does not run too freely, but has a certain friction in its rotational movement. As a result, the risk is avoided that the wire 3 pays out because of its inherent springiness when the drawing device 9 is released from the screen and is moved. To the same end, the spool 11 may possibly also be provided with a pawl mechanism which, in the activated state, prevents rotation in a direction such that the wire 3 pays out.

Furthermore, the interconnection between the spool 11 and the handle 10 need not be effected in the above-described manner, but it should well be possible to employ other types of gear arrangements, or possibly no gear arrangement at all, so that the handle 10 is non-rotationally static on the spool 11 proper.

As an alternative to the employment of the cranking handle 10, it is also possible to dispose, in the drawing device 9, a suitable, preferably reversible, driving motor which may be electrically or pneumatically powered.

As is apparent from the Drawings, the guide member 7 is also provided with a suction cup 19 and a handle 20. This suction cup functions in a manner which is wholly analogous to that disclosed for the suction cups 19 in the drawing device 9. In certain cases, the suction cup 19 may directly engage with the wire 3 and guide the wire; in such an event the pulley or slip block 8 may possibly be dispensed with.

The guide member 7 is further provided with an arm 21 fixedly mounted in the suction cup 19, the pulley or slip block 8 being anchored in the free end of the arm. In order to permit that a portion of the pulley or slip block 8 which engages with the wire 3 be placed so as to hold the wire at such a distance (for example a couple of millimeteres) that the cutting portion 6 of the wire cuts approximately in the middle of the glue joint 2, the arm 21 is suitably curved in towards the screen. The arm or the slip block may also be adjustable towards and away from the screen.

Irrespective of how or where the wire 3 is guided, in other words be it on the suction cup 19 or the pulley 8, it is an advantage if the run of the wire is disposed such that the wire cuts approximately in the middle of the glue joint 2 and parallel with the screen 1.

In certain positions, the guide member 7 may be subjected to extreme stresses, often in the form of torsional forces which tend to shift, twist, or even dislodge the guide member from the glass screen. For this reason, the guide member and the drawing device are designed in such a manner that they may be interconnected by means of a suitable rod, so that the guide member 7 is supported and positionally fixed in relation to the drawing device 9. Suitably, this rod may be adjusted on the shaft or anchorage bolt which is used for fixedly securing the pulley or slip block 8. In this instance, the opposite end of the rod is suitably placed against an abutment shoulder of some type, as close to the centre line of the spool 11 as possible. Naturally, interconnection rods of this type may be of varying length, depending upon the contemplated working situation and may be adjustable in length. Alternatively, the guide member may be adjustable along the rod.

REDUCTION OF THE INVENTION INTO PRACTICE

The wire 3, which may be a so-called piano wire with a diameter of the order of magnitude of from 0.6 to 0.8 mm, is stuck through the glue joint 2, once this has been freed of possible masking strips and other objects which may be in the way. In this operation, the wire is suitably stuck through the glue joint from the outside, with the help of a suitable tool such as combination pliers or the like. The wire stuck through to the inside of the screen is then

fixed on the spool 11 whereafter the protective guard of the spool is mounted and the drawing device 9 is fixed on the inside of the screen.

On the outside of the screen, the wire 3 is then laid in a loop
5 along the glue joint, preferably an entire circumferential turn, whereafter the opposite end of the wire is once again stuck through the glue joint and fixed in the anchorage device 5. The cranking handle 10 is then operated so that the wire 3 is tightened and wound up on the spool 11. If, in this action, the angle between the wire 3 and glue joint 2 is not acute, the guide member 7 is employed to impart to the wire such a direction that it, as far as is possible, will run with two parts parallel to the outside and the inside, respectively, of the glue joint, so that the cutting portion 6 will thereby attain maximum cutting effect. According to the invention,
15 the wire 3 should also, for reasons set forth below, be guided in such a manner that it is, as far as is possible, parallel with the plane of the screen, at least in the region of the glue joint 2, so that, after the cutting operation, there will remain two equally thick strands of the glue joint: one on the screen and one on the
20 chassis.

Once a certain stretching of the wire has occurred, the wire will, with its cutting portion 6, cut through the glue joint 2, preferably so that roughly equal remnants of the glue joint will remain on both the vehicle chassis and on the inside of the screen.

25 When the cutting operation of the glue joint has proceeded a certain distance, it will often become necessary to move either the guide member 7 or the drawing device 9 - or possibly both - so that the wire on the inside of the glue joint is always held at an acute angle to the longitudinal direction of the glue joint.

30 In practice, only a very small number of relocations of the guide member and the drawing device will be required to allow the wire to cut through the glue joint all the way round, so that the screen will thereby be completely free and can be lifted out from the groove in the vehicle chassis.

35 Naturally, it is not necessary that the wire be stuck through the glue joint in the manner described above from the outside; it may, often depending upon the detailed design of the vehicle chassis

and the interior fixtures and fittings within the vehicle, be equally possible to stick the wire through the glue joint from the inside. It is, clearly, also possible to allow the anchorage device 5 to remain on the outside of the glue joint, in which case the fixing element may, for example, be provided with sharp claws or the like which are pressed into the glue joint and thereby be positionally fixed in relation to the chassis.

According to the invention, it is also possible to employ two shorter wires and, using each one individually, to cut through only approximately half of the circumference of the glue joint. Such an operational method may prove to be particularly practical when a very large screen is to be dismounted, for example the windscreen of a bus or the like.

Using the above-described cutting method, in particular if a little care is devoted to placing the wire 3 approximately in the middle of the thickness of the glue joint on its outer side, and particularly also if the pulley 8 or slip block on the guide member 7 is designed to hold the wire at the cutting portion 6 at a distance of one or a couple of millimetres from the inside of the screen, the wire will cut the glue joint in an even and uniform manner, so that approximately half of the glue joint is left on the screen and half on the vehicle chassis. On remounting of such a screen, all that is required is degreasing and cleaning of the cut surfaces of the old glue joint, whereafter new glue is applied, the screen is aligned and pressed in place and is held in position until such time as the new glue has set. Thus, removal of the old glue residues need not be considered - nor is this desirable - since this would entail considerable extra work, both as regards removal and as regards after-treatment of both the glass screen and the vehicle chassis.

DESCRIPTION OF ALTERNATIVE EMBODIMENTS

The embodiment according to Figs. 3 and 4 differs from the embodiment according to Figs. 1 and 2 essentially in that the guide member 7 has been given a different design. Thus, the description of the drawing device 9 will not be repeated, it should merely be pointed out that the spool 11 is placed in such a manner in relation to the suction cups 19 that the spool will lie very close to the

screen 1 thus affording the considerable advantage that uneven loading on the suction cups is avoided, at the same time as the wire 3 will run so close to the screen that the incision will be substantially parallel to the screen or the panel groove 12.

5 In the embodiment contemplated here, the guide member 7 has no suction cup 9, but is connected to the plate 14 by the intermediary of a rod 22 which is pivotally anchored in the plate 14. The rod has a fork-shaped end 23 which engages with a support 24 on the plate 14, the support and the fork-shaped end being designed such that the
10 rod 22 may be pivoted in a plane approximately parallel to the screen 1, substantially throughout its entire circumference. In such cases where the screen is greatly arched, the rod is also pivotal towards and away from the screen so that its end with the slip block or pulley 28 can always hold the wire in the intended position adjacent the screen. Alternatively, the slip block or pulley is adjustable in relation to the rod.

The other end of the rod 22 is provided with a locking joint member 25 which serves for the pivotal adjustment and locking of a support arm 26 which, with its other end 27, is urged into abutment
20 against the flange 12 or the glue joint 2.

The locking joint member 25 is further provided, on its side facing the screen 1, with a rotary pulley 28 or a slip block, which should also be placed as close to the screen as possible. It will be apparent from Fig. 3 that the wire 3 is led from the drawing device
25 9 to the pulley 28, where the wire is deflected and led further to the cutting portion 6 of the wire. It should here be observed that the support arm 26 is curved and fixedly locked in one direction so that it makes an angle with the rod 22 in such a manner that it is directed in the same direction as that portion of the wire located
30 between the pulley 28 and the cutting portion 6. As a result, on tightening of the wire by means of the drawing device 9, the end 27 of the support arm 26 will be supportingly urged against the flange 12 on the windscreen post.

Since the support arm 26 is pivotal through a whole revolution
35 and is lockable in substantially any optional position, the support member 7 may always be moved in such a manner that the cutting portion 6 of the wire will attain optimal cutting effect, at the same

time as being held approximately in the middle of the glue strand.

In order to increase working comfort and to improve adjustment possibilities, it is appropriate that the rod 22 be designed in such a manner as to be of variable length, for example it may be of two
5 telescoping sections with a transverse pin for positional adjustment. It may also be designed as a so-called turnbuckle screw.

In yet a further alternative, use is made of a suction cup, approximately as in the embodiment of Figs. 1 and 2. This suction cup does not directly carry the guiding pulley or slip block, but is instead provided with a support arm which is pivotally interconnected
10 with an arm corresponding to that shown by reference numeral 22 in Fig. 3. In this alternative, the free end of the arm 22 supports a slip block which has a groove for guiding the wire. The slip block is, in this instance, placed in the free end of the arm 22, outside
15 the anchorage point of the support arm, whereby the slip block may be adjusted to a position very close to the glue joint for a correspondingly accurate guiding of the wire.

Use may also appropriately be made of an abutment which is adjustable in a direction towards and away from the screen and which
20 abuts against the screen and thereby holds the slip block in exactly the correct position in the transverse plane of extent of the screen.

In such situations where a seriously damaged and splintered screen is to be dismounted, problems may, despite the fact that the
25 screen is laminated, be experienced in achieving sufficient adhesion of the suction cups 19 in the above-described embodiments. The embodiment according to Figs. 5 and 6 is constructed so as also to obviate this problem.

On most windscreen posts 13, there is as a rule provided one or
30 more holes immediately adjacent the inside of the screen, the holes serving for the anchorage of masking strips or the like. In such cases where holes are not provided, these may be made, without damaging the vehicle, since a narrow edge portion of the windscreen post 13 is, here, covered by a masking strip.

35 As is most clearly apparent from Figs. 5 and 6, this embodiment also includes a drawing device 9, of which it might merely be mentioned that, like the above-described embodiments, it includes a

plate 14 with a suitably journaled spool 11 mounted thereon and facing the screen 1 for taking up the wire 3, the spool being rotary by one means or another under the action of a cranking handle 10.

In this contemplated embodiment, the drawing device is not fixedly anchored by means of suction cups to the windscreen, but is, instead, provided with a transverse rod 29 along which it may be shifted and locked in place in any optional position. The transverse rod 29 has at least one, but preferably two, length adjustment elements 30, for example in the form of so-called turnbuckle screws. A stub shaft 31 is, further, disposed at each end of the transverse rod 29, the stub shafts being intended for insertion into the above-mentioned holes in the posts 13. After tightening of the length adjustment element 30, the transverse rod 29 will, thus, be securely locked in the posts 13.

As an alternative to the length adjustment elements 30, the transverse rod 29 may also be designed with a larger-diameter central section along which the drawing device may be shifted and fixed by means of a locking device in any optional position, and two telescopically inserted end sections, which, by means of locking devices, may be locked in selected protracted positions. At their free ends, the end sections are provided with stub shafts 31 which may be disposed on end pieces insertable in the end sections so that that the stub shafts may easily be substituted and thereby readily adapted, as regards detailed design and direction, to the dimensions and physical properties of the vehicle chassis in question.

Furthermore, the plate 14 of the drawing device 9 has a pivotal bracket 32 in which a guide arm 33 may be anchored. In this case, the bracket 32 is designed in such a manner as to permit pivoting of the guide arm 33 in a plane approximately parallel to the plane of the screen 1 throughout as good as one complete turn, at the same time as the guide arm may be fixed in substantially any optional position throughout its entire length.

The bracket 32 for the guide arm 33 may, naturally, also be designed in the manner described above with reference to Figs. 3 and 4, or also as the above-described modified variation.

At its free end, the guide arm 33 has a rotary pulley 28 which serves to engage with the wire 3 for its guidance. Alternatively,

the wire 3 may be guided by means of a slip block disposed outermost in the free end of the guide arm 33, in full analogy with that described above. In order that the guide arm 33 be not pivoted under the action of the tractive force which the wire 3 exerts against the pulley 28 when the drawing device 9 operates, the guide arm 33 is provided with a pivotal connection to a support arm 34 which may be catchable or fixedly retainable in the transverse rod 29. In this arrangement, the support arm 34 may suitably be provided with a series of holes 35 for cooperation with a corresponding pin or screw on the transverse rod 29, so that the guide arm 33 may thereby be adjusted and set in a large number of angular positions in relation to the transverse rod 29. Naturally, to make this possible, the support arm 34 is fixedly retained in the guide arm 33 by means of a joint 36.

As opposed to that shown on the Drawing Figure, the joint 36 may be placed at the free end of the guide arm 33, but suitably inside the slip block or pulley 28. Furthermore, the support arm 34 is suitably secured in the transverse rod 29 by means of a pivotal anchorage which clamps about both the support arm and the telescopic end sections of the rod 29 and which thereby may be steplessly slid along the rod and which also permits stepless length-adjustment of the support arm 34.

In order that the currently contemplated embodiment of the present invention be applicable to screens 1 of different sizes, the transverse rod 29 may suitably be replaceable so that it can be used for different lengths. Alternatively, it may, of course, be permanently fixed in the plate 14 and instead designed telescopically so that its length may be varied within broad limits.

It will be apparent from Fig. 5 that the windscreen 1 is arched, for which reason there is ample space for the spool 11. In such cases where the windscreen is greatly arched, it is possible, in a corresponding manner, to bend the transverse rod 29 or alternatively to place the spool 11 closer to the screen 1 in order thereby to give the wire 3 a more optimum run, in other words such a run that it will lie, at least with its cutting portion 6, approximately parallel to the plane of the screen.

The invention may be modified within the scope of the appended Claims.

WHAT WE CLAIM AND DESIRE TO SECURE BY LETTERS PATENT IS:

1. A method for dismounting a glued vehicle screen from a vehicle chassis, **characterised in that** a wire (3) is passed through the glue joint (2) fixedly retaining the screen (1); **that** the wire, on the outside of the screen, is laid along a portion of the glue joint; **that** the wire is subjected to traction; **and that** during such traction, the wire is guided, on the inside of the screen, to make an acute angle with the longitudinal direction of that portion of the glue joint which the wire cuts through.

2. The method as claimed in claim 1, **characterised in that** the wire (3), on the outside of the screen (1), is laid along substantially the entire glue joint (2); **and that** the wire is, with one portion thereof, positionally fixed in the proximity of that point where it is passed through the glue joint; **and that** the wire is subjected to traction from the inside of the screen.

3. The method as claimed in claim 1 or 2, **characterised in that** the wire (3), during the traction process, is taken up in a drawing device (9) which is secured to the inside of the screen (1).

4. The method as claimed in claim 3, **characterised in that** the wire (3) is guided by means of a guide member (7) which is secured to the inside of the screen (1).

5. The method as claimed in claim 4, **characterised in that** the guide member (7) is supported against the drawing device (9).

6. The method as claimed in any one of the preceding claims, **characterised in that** the wire (3) is only drawn in towards the inside of the screen.

7. The method as claimed in any one of claims 2 to 6, **characterised in that** positional fixation of the wire (3) is effected on the inside of the screen.

8. An apparatus for dismounting a glued vehicle screen (1) from a vehicle chassis (13), **characterised by** a wire (3) which may be passed through a glue joint (2) retaining the screen (1), an anchorage device (5) which may be fixedly mounted on an end portion (4) of the wire and is designed for positional fixing of the wire (3) in relation to the screen (1) or the vehicle chassis (13), and a

(claim 8 contd)

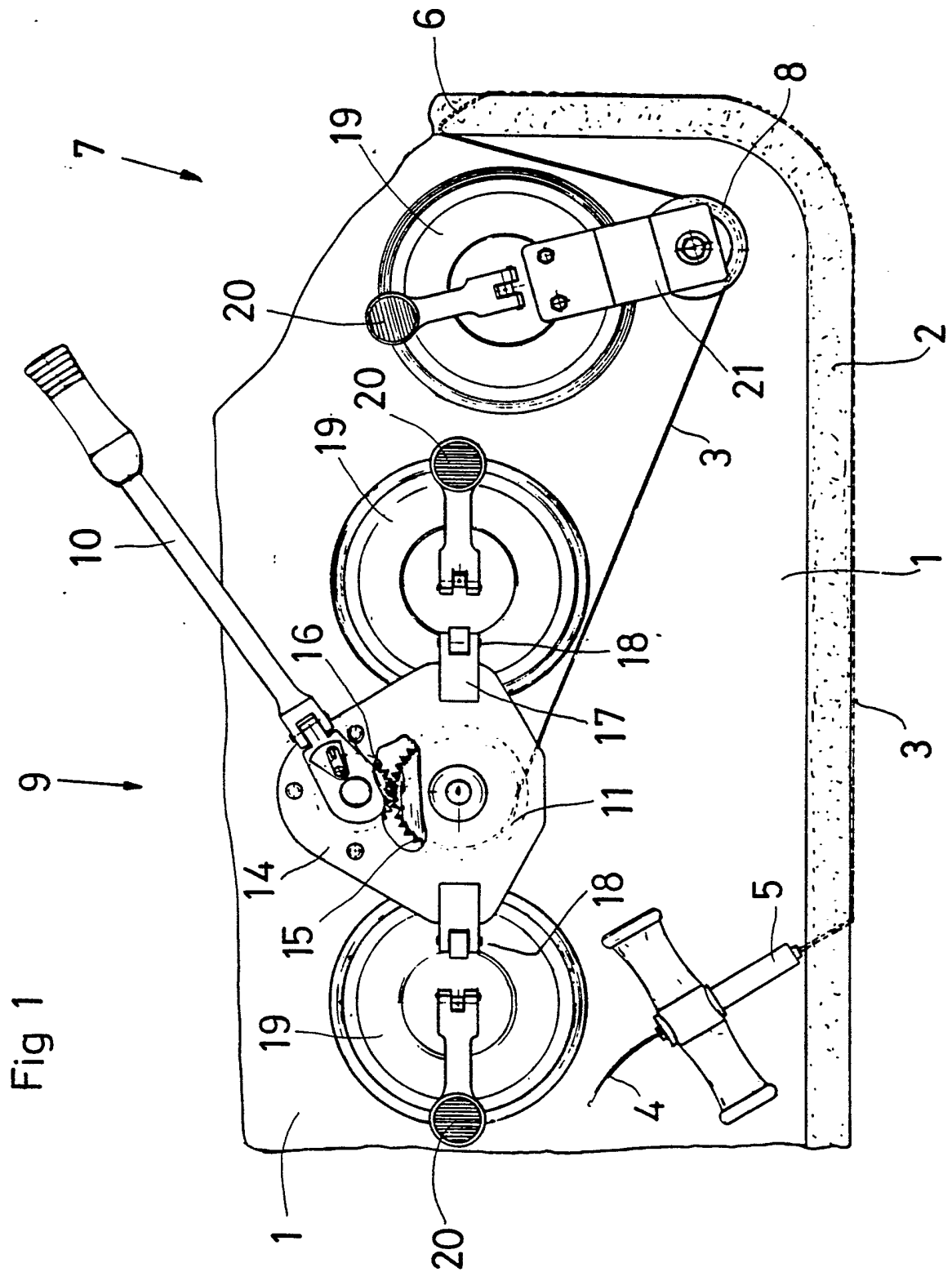
drawing device (9) which is designed to subject the wire to tractive force and is movably fixable on the inside of the screen.

9. The apparatus as claimed in claim 8, **characterised by** a guide member (7) movably securable on the screen (1), with a guide
5 element (8) for guiding the wire (3) along the screen and to an acute angle with the longitudinal direction of that portion of the glue joint (2) through which a cutting portion (6) of the wire extends.

10. The apparatus as claimed in claim 9, **characterised in that**
10 the guide member (7) and the drawing device (9) are positively interconnectible with one another.

11. The apparatus as claimed in any one of claims 8 to 10, **characterised in that** both the drawing device (9) and the guide
member (7) are fixable to the screen (1) by means of suction members
15 (19) which are, at least on the drawing device, pivotally anchored therein.

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2/5

Fig 2

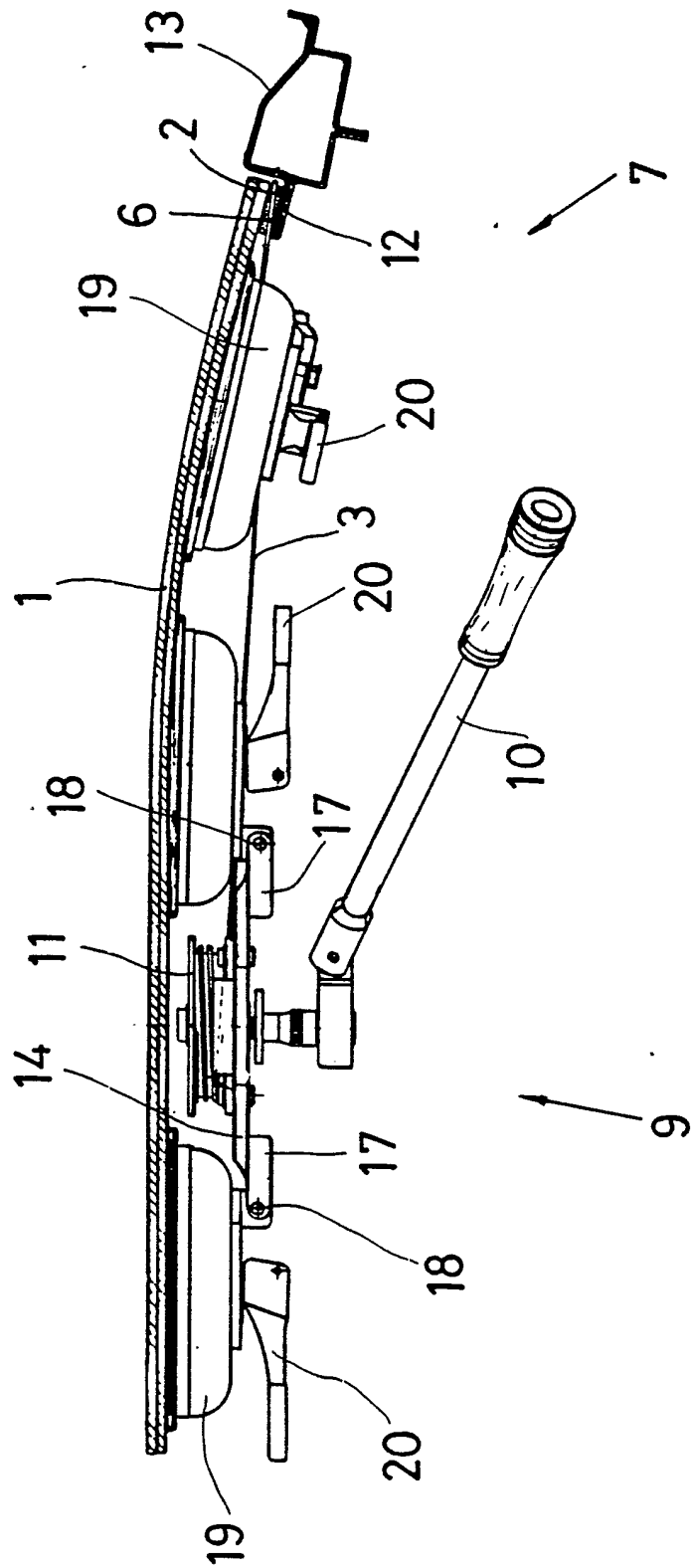
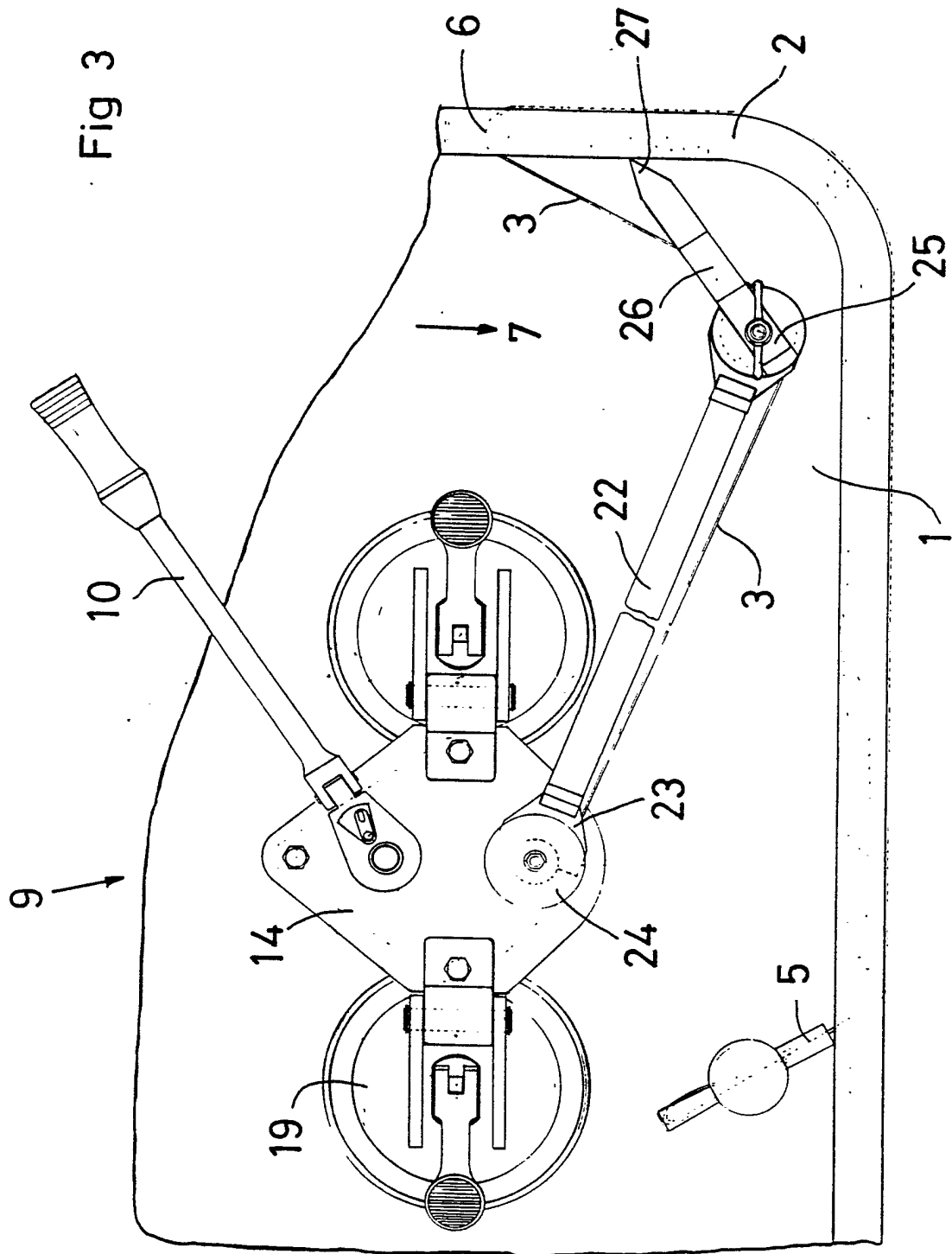
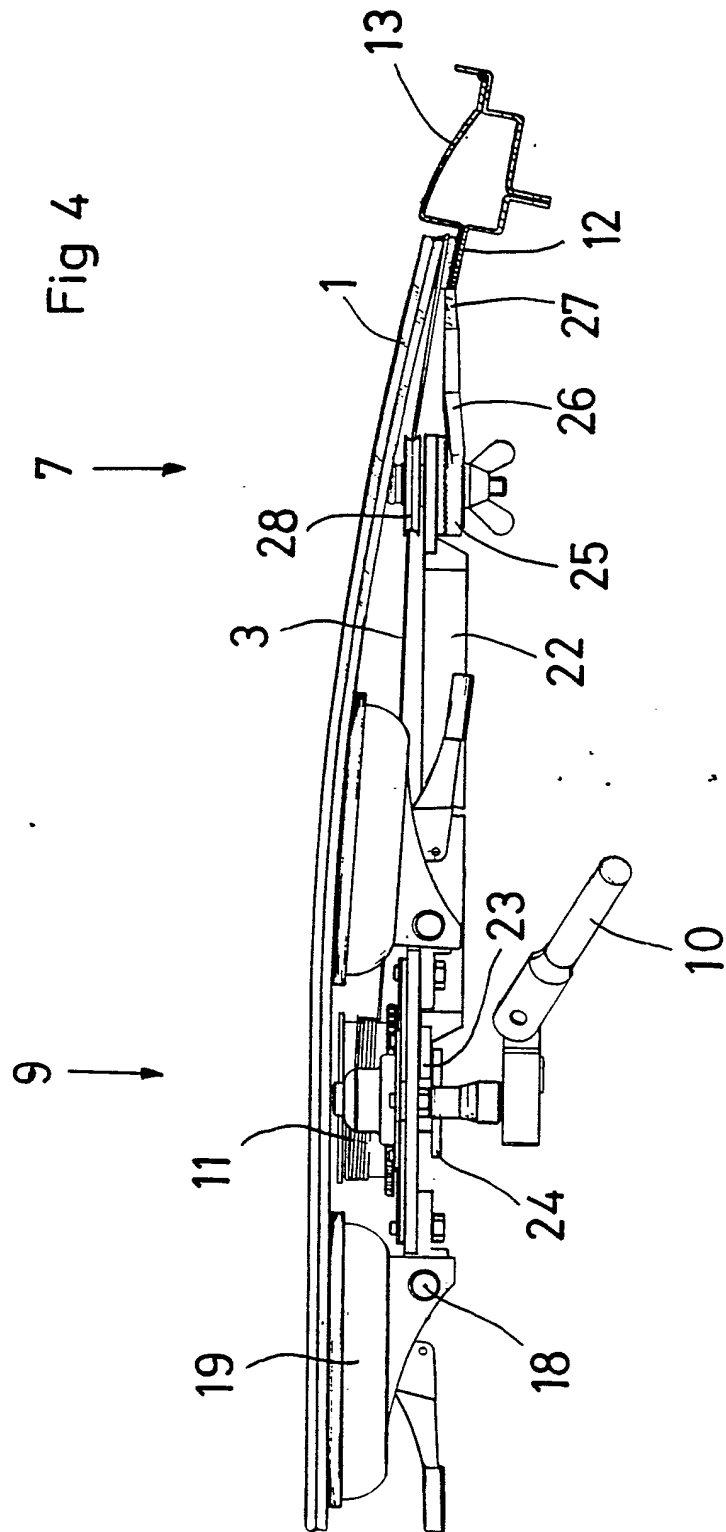
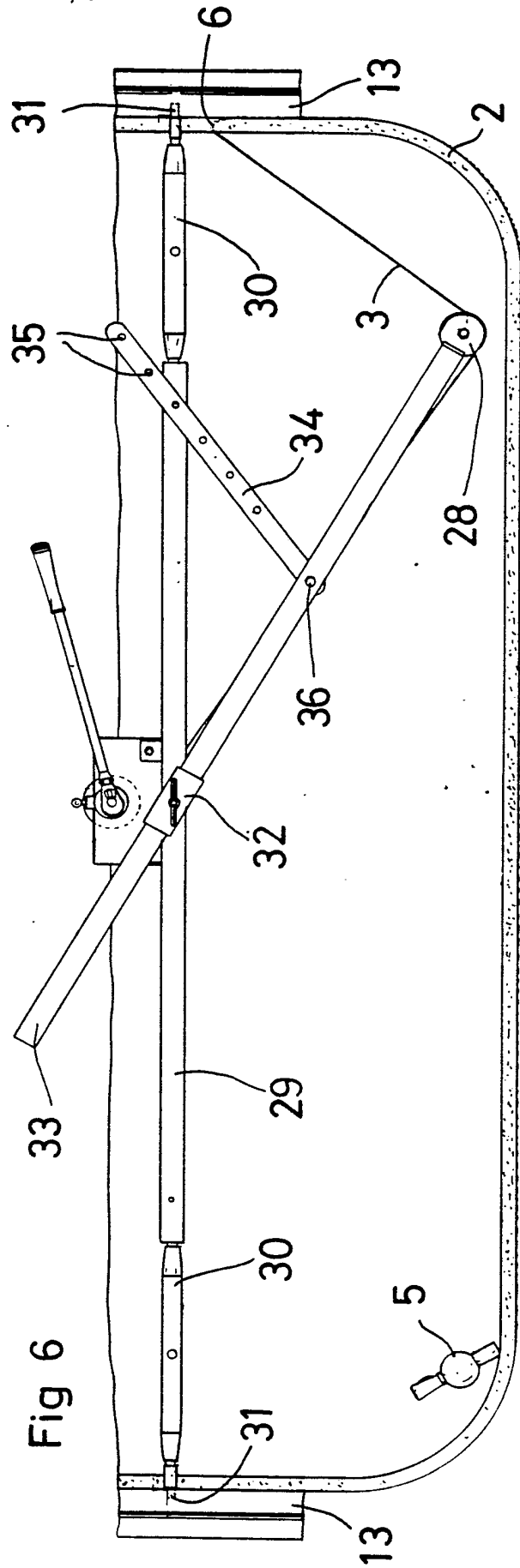
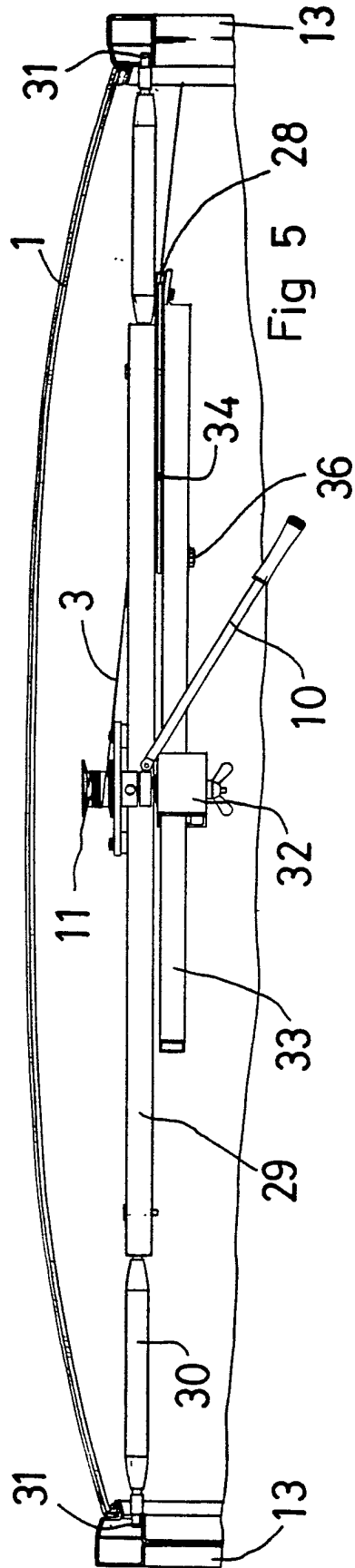


Fig 3

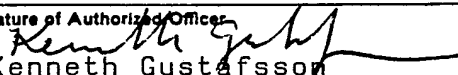






INTERNATIONAL SEARCH REPORT

International Application No PCT/SE86/00245

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
B 60 J 1/00		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC 4	B 60 J 1/00, /02, /20, 9/00, /02; B 60 R 13/06; B 60 S 5/00	
Nat C1	63c:58/01	
US C1	49:463, 466; 52:127; 296:84, 93	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	EP, A, 93 283 (S HÄRDL ET AL) 9 November 1983 & DE, 3215892	1, 2, 3, 4, 6, 7, 8, 9
A	EP, A, 121 480 (H KUNERT ET AL) 10 October 1984	1
A	FR, A, 2 179 511 (J BOYER) 24 November 1973	1
A	FR, A, 2 199 506 (HANFF-SERRES) 12 April 1974	1
A	FR, A, 2 227 985 (LINKE-HOFFMANN-BUSCH) 29 November 1974	1
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"Δ" document member of the same patent family</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
1986-08-05	1986-08-07	
International Searching Authority	Signature of Authorized Officer	
Swedish Patent Office	 Kenneth Gustafsson	